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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,198	10/31/2003	Jose Carlos Garza-Davila	120426-2020A (124809A)	3473

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FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER	
TUROCY, DAVID P	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,198	GARZA-DAVILA ET AL.	
	Examiner	Art Unit	
	David Turocy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *11-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments, filed 3/6/2006, have been fully considered and reviewed by the examiner. The examiner notes the amendment to the abstract and the inclusion of Prior Art label for Figure 1, in amendments filed 11/14/2005 and 12/1/2005, and therefore the objects to such have been withdrawn. Claims 1-15 remain pending in the instant application with claims 11-15 withdrawn due to a restriction requirement.

Response to Arguments

2. Applicant's arguments filed 11/14/05 have been fully considered but they are not persuasive.

3. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

4. In response to applicant's arguments against the references individually, specifically Gerard, where the applicant argues the tank-in-tank prior art would not be practical or effective for the baths as claimed as shown in the specification, one cannot

show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

5. In response to applicant's argument based upon the age of the references, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 recites the limitation "the resulting interim molten bath" in paragraph 4. There is insufficient antecedent basis for this limitation in the claim.

The other dependant claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4645694 by Gerard et al., hereafter Gerard in view of US Patent 5912055 by Gore et al., hereafter Gore, and further in view of Kirk-Othmer, US Patent 3956821 by Martin, hereafter Martin and the admitted state of the art as taught by the applicant description.

Gerard teaches a method of galvanizing two different coatings on a metal band using a dual tank method (Abstract). Gerard discloses withdrawing an amount of a first

molten metal from the first tank to provide sufficient space for the second tank, partially immersing the second tank with the first tank in heat transfer contact with the first coating metal and subsequently filling the second tank with a second different molten metal (Column 1, line 65 - Column 3, line 42). Gerard discloses controlling the temperature of the second molten metal by controlling the heating means on the first tank, which would result in an uninsulated second bath (Column 1, line 65 - Column 3, line 42). Gerard discloses the molten metal in first and second tank have about the same upper level (Figure 2).

Gerard fails to disclose changing over from an aluminum-zinc alloy to a molten zinc alloy.

However, Gore teaching of continuous hot dip metal using a dual pot system discloses using a first pot comprising aluminum-zinc alloy comprising 25 to 70 wt % aluminum, which produces superior coatings, and a second pot comprising normal galvanizing using a zinc alloy containing about 0.2 wt% aluminum (Column 1, lines 26-33). Gore discloses the aluminum-zinc alloy is in production in certain areas where there is still demand for standard zinc alloy coatings (Column 1, lines 35-45). Gore discloses a high aluminum content will be more corrosive (Column 1, lines 35-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gerard to use the first coating metal as molten zinc/aluminum alloy and a second coating metal as molten zinc alloy as suggested by

Gore to provide a desirable production of galvanized metal on a continuous strip because Gerard discloses producing two different coatings on a metal strip and Gore discloses certain industrial areas demand production of both superior zinc/aluminum alloy coatings and standard zinc alloy coatings.

Gerard in view of Gore fails to disclose modifying the composition of the molten metal bath in the first bath so that the melting temperature of the first tank is below the operating temperature of the second tank.

However, Kirk-Othmer discloses the operating temperature of a zinc molten metal bath is 445-465°C and also discloses an aluminum containing composition has a high melting point when compared to zinc. In particular Kirk-Othmer discloses a known superior aluminum-zinc alloy coating composition, which provides two to six times the life of a typical zinc coating, includes 55% aluminum, 43.4% zinc, and 1.6% silicon, which is within the range as claimed.

In addition Martin discloses an Al-Zn phase diagram, where the superior coating as taught by Kirk-Othmer has a melting point over 550°C, which is above the operating temperature of the second zinc alloy bath (Figure 4). The phase diagram discloses, following line (60), that the reduction of the weight percent of aluminum results in the reduction in the melting temperature, i.e. by increasing the weight percent of zinc in the molten metal bath results in a reduction of melting temperature (Figure 4). In addition the admitted state of the art as taught by the applicant description discloses that it is known in the art for the metal to remain in the molten state within the tank when not in

use because of thermal shock which produces cracks in the ceramic lining (Page 5, specification). In addition, the admitted state of the art discloses galvanizing pots are known in the art to including insulting material to reduce heat losses to the environment (page 2, lines 3-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gerard in view of Gore to use the superior coating composition as suggested by Kirk-Othmer to provide a desirable coating on a metal strip because Kirk-Othmer discloses coating comprising 55% aluminum, 43.4% zinc, and 1.6% silicon is known in the art to provide superior coating to zinc and one of ordinary skill in the art would desire to reap the benefits of a coating with a longer life.

In addition, it would have been obvious to one skilled in the art at the time of the invention to modify Gerard in view of Gore and Kirk-Othmer to increase the zinc composition in order to decrease the melting temperature of the molten aluminum-zinc alloy suggested by Martin to provide a desirable first molten metal with a melting temperature sufficient effectively control the temperature of the molten zinc composition within the operating temperature because Gerard in view of Gore teaches a first aluminum/zinc bath temperature controlling the temperature of a second zinc alloy bath with an operating temperature of 445-465°C and Martin teaches increasing the zinc weight percent in a aluminum-zinc alloy effectively reduces the melting temperature. Modifying the zinc content would inherently result in a reduction of corrosiveness as evidenced by Gore (Column 1, lines 35-40).

Claim 4: The operating temperature of the second coating bath, zinc alloy, ranges from 445-465°C as taught by Kirk-Othmer and, however, Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description fails to explicitly disclose lowering the weight percent of aluminum from 55% to 10%, the Al-Zn Phase diagram as taught by Martin discloses adding zinc by weight, inherently reducing the weight percentage of aluminum, results in a reduction of melting temperature is thus a cause effective variable.

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as aluminum weight percent to reduce the melting temperature of the first bath at the operating temperature of the second bath through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 5: The modified bath as taught by Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description fails to teach of a density. However, the prior art and the present claims, reflected by claim 5, teach all the same process steps and thus the results obtained by applicants process must necessarily be the same as those obtained by the prior art. Therefore by modifying the composition of the first bath to be below the operating temperature of the second bath by the addition of zinc, it must necessarily result in an alloy with a density within the range as claimed. Either 1) the applicant and the prior art have different

definitions adding zinc to the molten bath, or 2) the applicant is using other process steps or parameters that are not shown in the claims.

Claim 10: Gerard discloses returning the operation to the first molten metal by withdrawing the metal from the second tank and removing the tank and then returning the first molten metal to its original state by addition of ingots or liquid metal, which inherently results in adjusting the volume and composition (Column 1, line 65 - Column 3, line 42).

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description and further in view of US Patent Publication 2002/0145237 by Sieradzki.

Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description teaches all the limitations of this claim as applied to claim 5 above and in addition Gerard discloses using a preheating oven at column 3, line 30, but fails to teach of preheating the second tank to a temperature about 400°C.

However, Sieradzki discloses it is known in the art to preheat objects prior to contact with molten metal to prevent thermal shock.

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description to preheat the tank prior to the addition of molten metal as

suggested by Sieradzki because Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description teaches even a slight change in temperature may result in thermal shock of the ceramic tank lining and Sieradzki suggests preheating prior to contacting with molten metal reduces thermal shock.

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki fails to teach of preheating to 400°C. It is the examiners position that process parameters of temperature are known result effective variable. If preheating temperature were low it would still result in thermal shock and too high a preheating temperature would result in no added benefits of increase protection against thermal shock.

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the preheating temperature used in the process of Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki, through routine experimentation, to impart the ceramic liner with the desired temperature to minimize thermal shock.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant

description, and Sieradzki and further in view of Japanese Patent 2001-164349 by Arioka et al., hereafter Arioka.

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki teaches all the limitations of this claim as applied to claim 6 above, but they fail to disclose removing dross from the surface of the molten metal.

However, Arioka discloses it is known in the art to remove dross which is floating on the surface of a molten bath (Abstract). Arioka discloses the surface appearance of the coated substrate is improved because of the removal of the dross (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki to remove the dross floating of the molten metal surface as suggested by Arioka because Arioka discloses removing dross from the surface of a molten bath improves the surface appearance and therefore one would reasonably desire to reap the benefits of an improved surface appearance.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka and further in view of US Patent 6503442 by Fukubayashi, hereafter Fukubayashi.

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka teaches all the limitations of this

claim as applied to claim 7 above, but they fail to disclose providing a zirconium-based coating on the exterior surface of the second tank.

However, Fukubayashi discloses a zirconium-based coating composition useful for resistance against highly corrosive environments including molten metals (abstract). In addition Fukubayashi discloses the coating composition allows for extending the surface life of parts in contact with molten metal (Column 1, lines 8-12).

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka to coat the exterior surface of the second tank with a zirconium-based coating as suggested by Fukubayashi because Fukubayashi discloses increasing the service life of parts in contact with molten metal corrosive environments by application of a zirconium-based coating and therefore one would reasonably desire to reap the benefits of an the longer service life of the second tank.

15.

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description and further in view of Japanese Patent 59-123753 by Nakahara et al, hereafter Nakahara.

Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description teaches all the limitations of this claim as applied to claim 1 above. In addition the admitted state of the art discloses that it is known in the

art that any reduced temperatures from removal of molten metal results in thermal shock of the lining of the tank (Page 2). However, they fail to teach of heating with a burner.

However, Nakahara teaches of known methods of heating the ceramic tanks during molten metal coating, by using for example a gas burner, electric heater, etc. (Page 4). While Nakahara does not teach of heating the ceramic liner, Nakahara does reasonably suggest gas burners are utilized during a molten metal process.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description to use the gas burner as suggested by Nakahara to provide a desirable protection against thermal shock because the admitted state of the art as taught by the applicants description teaches removing molten metal from a tank often, results in cooling of the ceramic liner, which results in thermal shock and Nakahara teaches gas burners are utilized for heating during molten metal coating process.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy
AU 1762

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER